

WHAT IS CLAIMED IS:

1. A condition management system for use with a processor
2 employing a hierarchical register consolidation structure,
3 comprising:

4 a condition management structure configured to abstract groups
5 of status indicators associated with said hierarchical register
6 consolidation structure into a tree of hierarchical container
7 objects and element objects, each of said container objects
8 associated with at least one of said element objects and linked to
9 a single parent object, each of said element objects configured to
10 represent at least one of said status indicators and linked to a
11 single child object;

12 an abstraction retrieval subsystem configured to employ said
13 condition management structure to traverse said hierarchical
14 register consolidation structure to determine a condition of at
15 least one of said status indicators; and

16 an abstraction management subsystem configured to employ said
17 condition management structure to control a propagation of selected
18 ones of said status indicators through said hierarchical register
19 consolidation structure.

2. The condition management system as recited in Claim 1
2 wherein each of said container objects includes said at least one
3 of said element objects.

3. The condition management system as recited in Claim 1
2 wherein said condition management structure is dynamically
3 allocated.

4. The condition management system as recited in Claim 1
2 wherein said condition management structure is pre-allocated within
3 the hardware associated with said processor.

5. The condition management system as recited in Claim 1
2 wherein said status indicators are bits of registers within said
3 hierarchical register consolidation structure.

6. The condition management system as recited in Claim 1
2 wherein said hierarchical register consolidation structure is a
3 hierarchical interrupt register structure of said processor.

2 7. The condition management system as recited in Claim 6
3 wherein each of said status indicators represents an interrupt bit
4 in an interrupt register of said hierarchical interrupt register
structure.

2 8. The condition management system as recited in Claim 7
3 wherein said abstraction management subsystem is further configured
to set/clear or enable/disable interrupts for said interrupt bit.

2 9. The condition management system as recited in Claim 1
3 wherein said parent object is a consolidation element object
4 associated with a hierarchically higher container object and said
child object is a hierarchically lower container object.

2 10. The condition management system as recited in Claim 9
3 wherein said consolidation element object represents the
consolidation of all of said element objects associated with said
4 child object.

2 11. The condition management system as recited in Claim 1
3 wherein said abstraction management subsystem is further configured
4 to set/clear said status indicators or maintain associated
parameters for one or more of said status indicators.

12. The condition management system as recited in Claim 1
2 wherein said abstraction management subsystem is further configured
3 to create or destroy said condition management structure.

13. The condition management system as recited in Claim 1
2 wherein said container objects include addresses to registers of
3 said hierarchical register consolidation structure, said
4 abstraction retrieval subsystem and said abstraction management
5 subsystem further configured to employ said addresses in accessing
6 said hierarchical register consolidation structure.

14. The condition management system as recited in Claim 1
2 wherein said abstraction retrieval subsystem is further configured
3 to employ a mask to determine said condition of said at least one
4 of said status indicators represented by ones of said element
5 objects associated with a leaf container object.

15. A method of operating a condition management system for
2 use with a processor employing a hierarchical register
3 consolidation structure, comprising:

4 employing a condition management structure to abstract groups
5 of status indicators associated with said hierarchical register
6 consolidation structure into a tree of hierarchical container
7 objects and element objects, each of said container objects
8 associated with at least one of said element objects and linked to
9 a single parent object, each of said element objects configured to
10 represent at least one of said status indicators and linked to a
11 single child object;

12 employing said condition management structure to traverse said
13 hierarchical register consolidation structure to determine a
14 condition of at least one of said status indicators; and

15 employing said condition management structure to control a
16 propagation of selected ones of said status indicators through said
17 hierarchical register consolidation structure.

16. The method as recited in Claim 15 wherein each of said
2 container objects includes said at least one of said element
3 objects.

17. The method as recited in Claim 15 further comprising
2 dynamically allocating said condition management structure.

18. The method as recited in Claim 15 further comprising pre-
2 allocating said condition management structure within the hardware
3 associated with said processor.

19. The method as recited in Claim 15 wherein said status
2 indicators are bits of registers within said hierarchical register
3 consolidation structure.

20. The method as recited in Claim 11 wherein said
2 hierarchical register consolidation structure is a hierarchical
3 interrupt register structure of said processor.

21. The method as recited in Claim 20 wherein each of said
2 status indicators represents an interrupt bit in an interrupt
3 register of said hierarchical interrupt register structure.

22. The method as recited in Claim 21 further comprising
2 setting/clearing or enabling/disabling interrupts for said
3 interrupt bit.

23. The method as recited in Claim 15 wherein said parent
2 object is a consolidation element object associated with a
3 hierarchically higher container object and said child object is a

4 hierarchically lower container object.

2 24. The method as recited in Claim 23 wherein said
3 consolidation element object represents the consolidation of all of
said element objects associated with said child object.

2 25. The method as recited in Claim 15 further comprising
3 setting/clearing said status indicators or maintaining parameters
for one or more of said status indicators.

2 26. The method as recited in Claim 15 further comprising
2 creating or destroying said condition management structure.

2 27. The method as recited in Claim 15 wherein said container
3 objects include addresses to registers of said hierarchical
4 register consolidation structure, said method further comprising
5 employing said addresses in accessing said hierarchical register
consolidation structure.

28. The method as recited in Claim 15 wherein said employing
2 said condition management structure to traverse includes employing
3 a mask to determine said condition of said at least one of said
4 status indicators represented by ones of said element objects
5 associated with a leaf container object.

29. A memory for storing data for access by an application
2 program being executed in a processor, comprising:

3 a condition management data structure stored in said memory,
4 said condition management data structure including information to
5 abstract groups of status indicators associated with a hierarchical
6 register consolidation structure of said processor into a tree and
7 accessed by said application program, said condition management
8 data structure including:

9 hierarchical container objects and element objects stored in
10 said memory, each of said container objects being associated with
11 at least one of said element objects and having a parent link to a
12 single parent object;

13 each of said element objects representing at least one of said
14 status indicators and having a child link to a single child object;
15 and

16 said parent object being a consolidation element object
17 associated with a hierarchically higher container object and said
18 child object being a hierarchically lower container object, thereby
19 establishing a hierarchy of said container objects.

30. The memory as recited in Claim 29 wherein one of said
2 container objects being associated with said at least one of said
3 element objects and a virtual element object if two groups of said
4 status indicators consolidate to a single consolidation status
5 indicator of said hierarchical register consolidation structure,
6 said virtual element object being said parent object to one of said
7 container objects associated with said element objects representing
8 said status indicators of one of said two groups.

31. The memory as recited in Claim 29 wherein a single one of
2 said element objects being said parent object to one of said
3 container objects associated with said element objects representing
4 a group of said status indicators if said group of said status
5 indicators consolidate to a plurality of consolidation status
6 indicators of said hierarchical register consolidation structure,
7 remaining ones of said plurality of said consolidation status
8 indicators not being represented in said condition management data
9 structure.

2 32. The memory as recited in Claim 29 wherein a first portion
3 of one group of said status indicators being represented by a first
4 set of said element objects associated with one of said container
5 objects and a second portion of said one group of said status
6 indicators being represented by a second set of said element
7 objects associated with a virtual container object if said first
8 and second portions of said one group of said status indicators
9 consolidate to different consolidation status indicators of said
10 hierarchical register consolidation structure, said virtual
11 container object having a virtual parent link to a different parent
object than said parent link of said one of said container objects.

2 33. The memory as recited in Claim 29 wherein each of said
3 container objects includes said at least one of said element
objects.

34. The memory as recited in Claim 29 wherein only one of
2 said container objects is a root container object, said root
3 container object being associated with a hierarchically highest
4 group of said status indicators of said hierarchical register
5 consolidation structure and being a starting point for accessing
6 said condition management data structure, said root container
7 object further having said parent link to said parent object being
8 unestablished.

35. The memory as recited in Claim 34 wherein ones of said
2 container objects are leaf container objects, each of said leaf
3 container objects being associated with a hierarchically lowest
4 group of said status indicators, each of said elements objects
5 associated with said leaf container objects having said child link
6 to said child object being unestablished.

36. The memory as recited in Claim 29 wherein each of said
2 element objects include a container link to its associated one of
3 said container objects.

37. The memory as recited in Claim 29 wherein each of said
2 element objects include a unique name and a position of said at
3 least one of said status indicators within a register of said
4 hierarchical register consolidation structure that is associated

5 with said at least one of said status indicators.

2 38. The memory as recited in Claim 29 wherein each of said
3 container objects include an address of a register of said
4 hierarchical register consolidation structure selected from the
group consisting of:

5 a status register address;
6 a mask register address;
7 a persistency register address; and
8 an alarm register address.

2 39. The memory as recited in Claim 29 wherein said status
3 indicators are bits of registers within said hierarchical register
consolidation structure.

2 40. The memory as recited in Claim 29 wherein said
3 hierarchical register consolidation structure is a hierarchical
interrupt register structure of said processor.

2 41. The memory as recited in Claim 40 wherein each of said
3 status indicators represents an interrupt bit in an interrupt
register of said hierarchical interrupt register structure.

42. The memory as recited in Claim 29 wherein said
2 consolidation element object represents the consolidation of all of
3 said element objects associated with said child object.